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ZXMN10A08E6

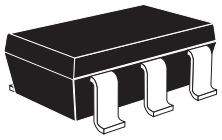
100V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}$= 100V; $R_{DS(ON)}$= 0.4Ω I_D= 1.5A

DESCRIPTION

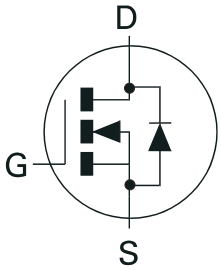
This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



SOT23-6

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT23-6 package

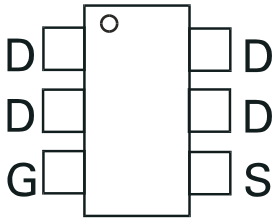


APPLICATIONS

- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN10A08E6TA	7″	8mm	3000 units
ZXMN10A08E6TC	13″	8mm	10000 units



Top View

DEVICE MARKING

- 10A8

ZXMN10A08E6

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	100	V
Gate Source Voltage	V_{GS}	±20	V
Continuous Drain Current V_{GS}=10V; T_A=25°C (b) V_{GS}=10V; T_A=70°C (b) V_{GS}=10V; T_A=25°C (a)	I_D	1.5 1.2 1.21	A
Pulsed Drain Current (c)	I_{DM}	5.3	A
Continuous Source Current (Body Diode) (b)	I_S	2.5	A
Pulsed Source Current (Body Diode) (c)	I_{SM}	5.3	A
Power Dissipation at T_A=25°C (a) Linear Derating Factor	P_D	1.1 8.8	W mW/°C
Power Dissipation at T_A=25°C (b) Linear Derating Factor	P_D	1.7 13.6	W mW/°C
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	113	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	73	°C/W

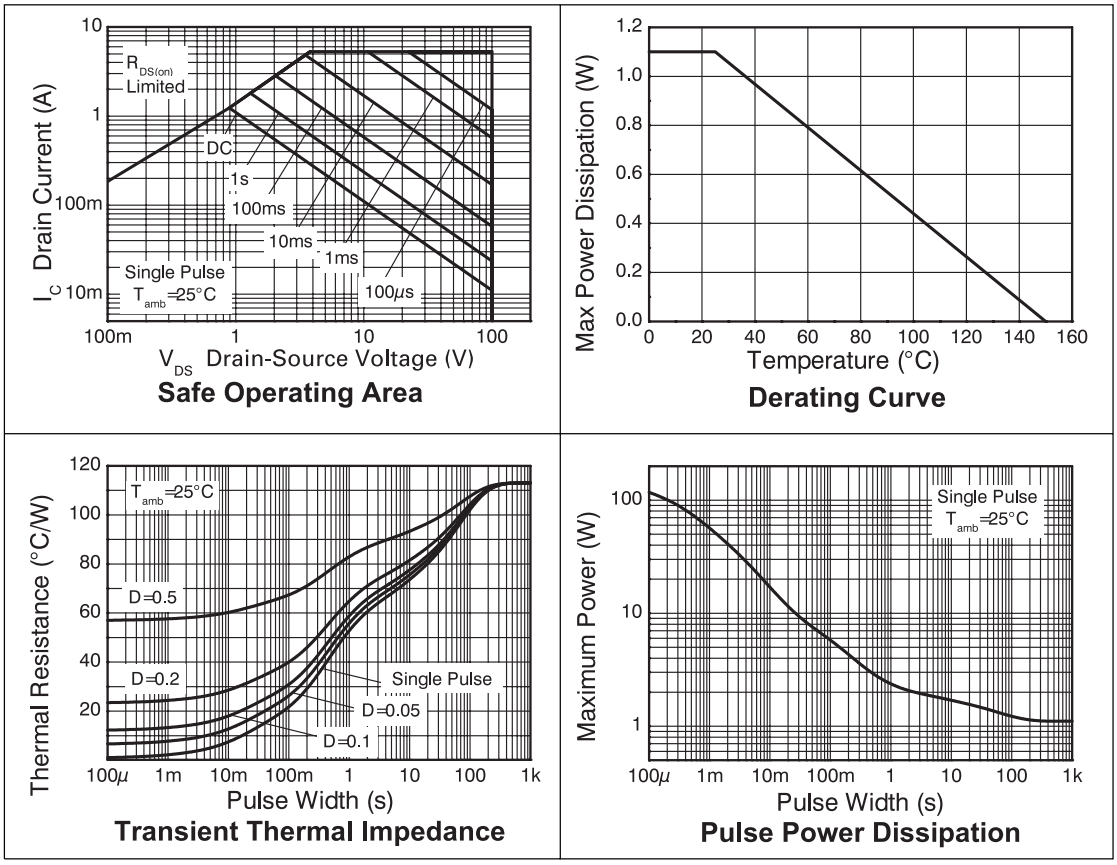
NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at t≤10 secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, D = 0.05, pulse width 10μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph

CHARACTERISTICS



ZXMN10A08E6

ELECTRICAL CHARACTERISTICS (at T_A = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	100			V	I_D=250μA, V_{GS}=0V
Zero Gate Voltage Drain Current	I_{DSS}			0.5	μA	V_{DS}=100V, V_{GS}=0V
Gate-Body Leakage	I_{GSS}			100	nA	V_{GS}=±20V, V_{DS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	2.0			V	I_D=250μA, V_{DS}= V_{GS}
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.40 0.60	Ω Ω	V_{GS}=10V, I_D=3.2A V_{GS}=6V, I_D=2.6A
Forward Transconductance (1)(3)	g_{fs}		5.0		S	V_{DS}=15V,I_D=3.2A
DYNAMIC (3)						
Input Capacitance	C_{iss}		405		pF	V_{DS}=50 V, V_{GS}=0V, f=1MHz
Output Capacitance	C_{oss}		28.2		pF	
Reverse Transfer Capacitance	C_{rss}		14.2		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		3.4		ns	V_{DD} =30V, I_D=1.2A R_G=6.0Ω, V_{GS}=10V
Rise Time	t_r		2.2		ns	
Turn-Off Delay Time	$t_{d(off)}$		8		ns	
Fall Time	t_f		3.2		ns	
Gate Charge	Q_g		4.2		nC	V_{DS}=50V,V_{GS}=5V, I_D=1.2A
Total Gate Charge	Q_g		7.7		nC	V_{DS}=50V,V_{GS}=10V, I_D=1.2A
Gate-Source Charge	Q_{gs}		1.8		nC	
Gate-Drain Charge	Q_{gd}		2.1		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}		0.87	0.95	V	T_J=25°C, I_S=3.2A, V_{GS}=0V
Reverse Recovery Time (3)	t_{rr}		27		ns	T_J=25°C, I_F=1.2A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q_{rr}		32		nC	

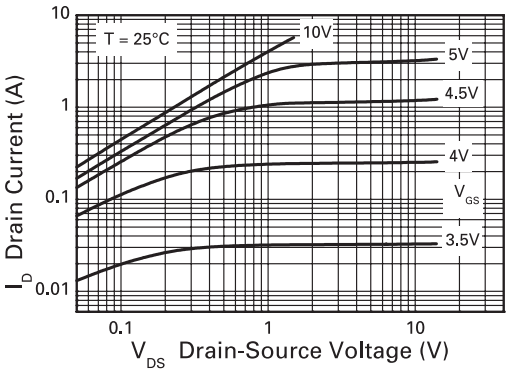
NOTES

(1) Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2% .

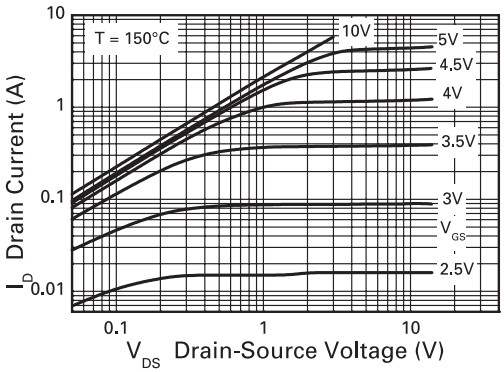
(2) Switching characteristics are independent of operating junction temperature.

(3) For design aid only, not subject to production testing.

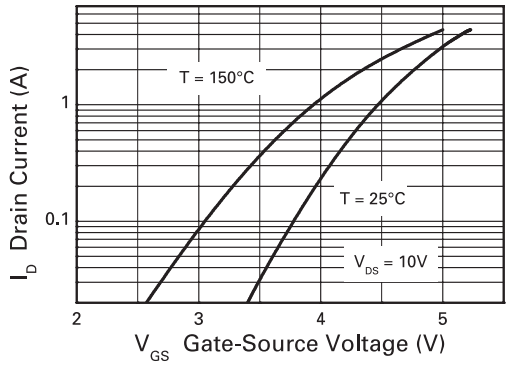
TYPICAL CHARACTERISTICS



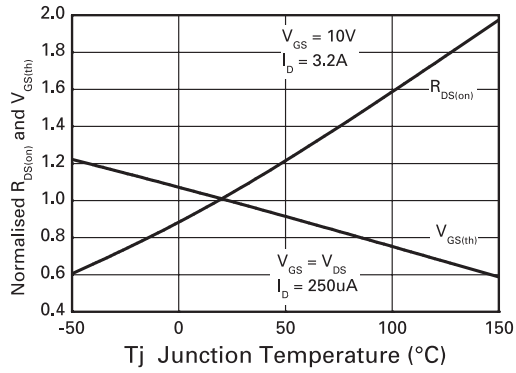
Output Characteristics



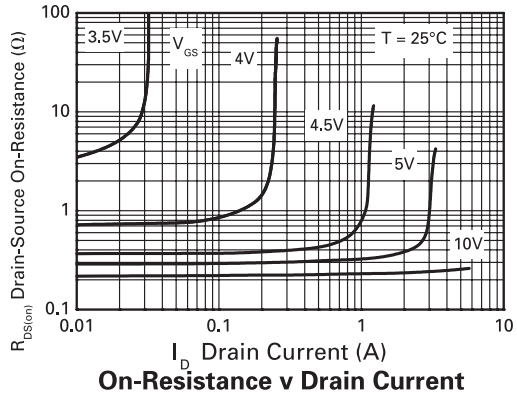
Output Characteristics



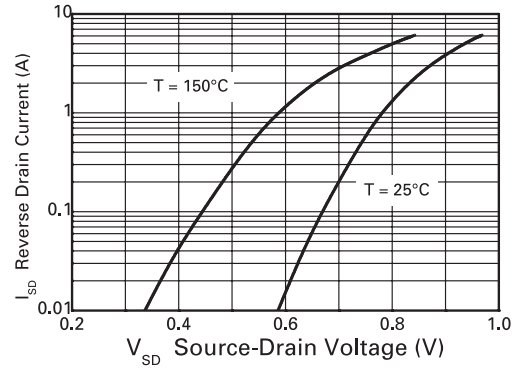
Transfer Characteristics



Normalised Curves v Temperature

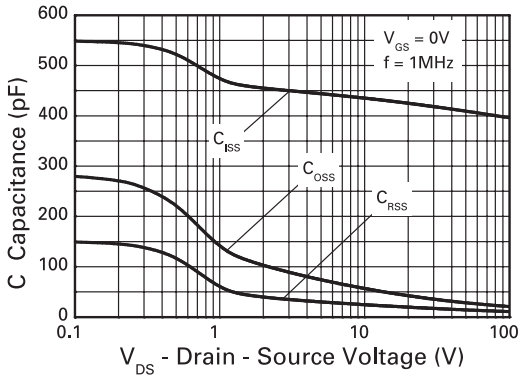


On-Resistance v Drain Current

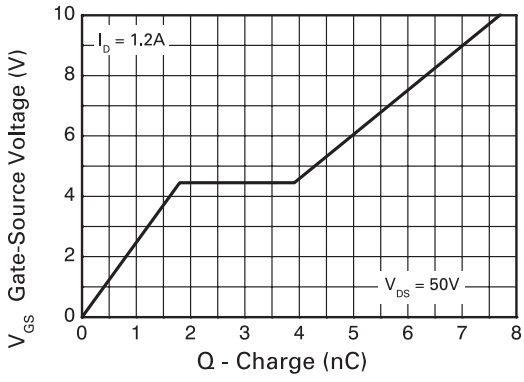


Source-Drain Diode Forward Voltage

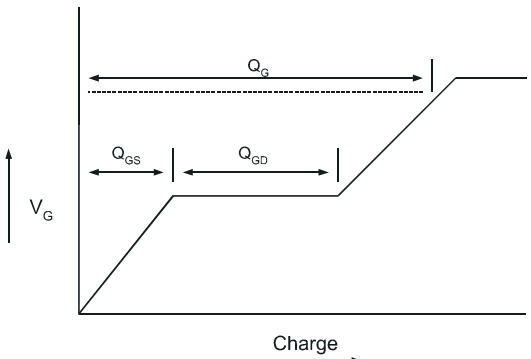
TYPICAL CHARACTERISTICS



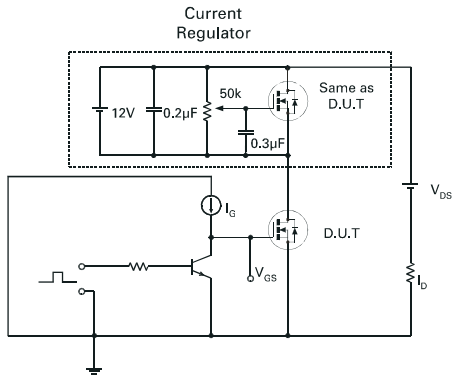
Capacitance v Drain-Source Voltage



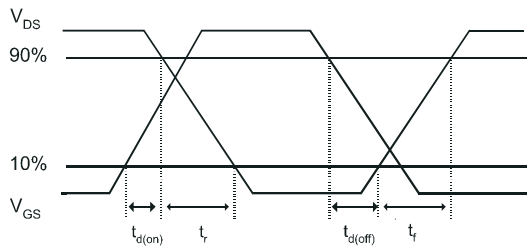
Gate-Source Voltage v Gate Charge



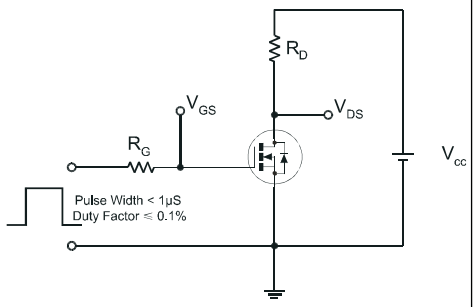
Basic Gate Charge Waveform



Gate Charge Test Circuit

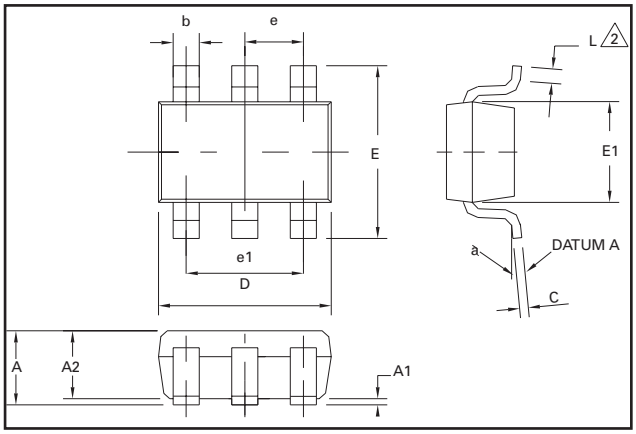


Switching Time Waveforms

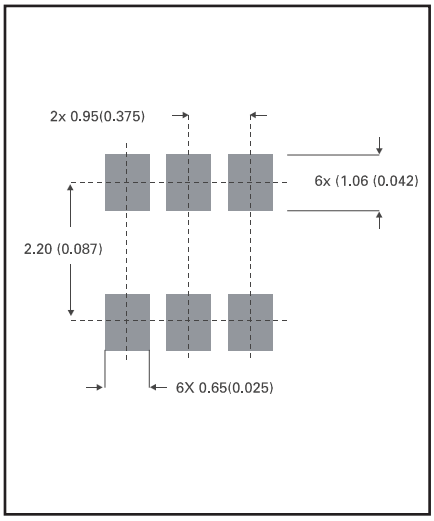


Switching Time Test Circuit

PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	0.90	1.45	0.35	0.057
A1	0.00	0.15	0	0.006
A2	0.90	1.30	0.035	0.051
b	0.35	0.50	0.014	0.019
C	0.09	0.20	0.0035	0.008
D	2.80	3.00	0.110	0.118
E	2.60	3.00	0.102	0.118
E1	1.50	1.75	0.059	0.069
L	0.10	0.60	0.004	0.002
e	0.95 REF		0.037 REF	
e1	1.90 REF		0.074 REF	
L	0°	10°	0°	10°

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